UKTLC and SHOT Recommendations on Information Technology

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Scottish National Blood Transfusion Service
Question

In 2018, can we get the benefits of information technology and automation in blood transfusion for everyone - patients and staff?
1986

I started work as a new haematology registrar at St Georges

No computers or automation in BT
Serological expertise
Infectious risks of transfusion
Consultant post at Queen Mary’s Roehampton

Computers for recording requests and results of tests done manually

SHOT – the biggest risk of transfusion was due to errors
INFORMATION TECHNOLOGY WILL PREVENT HUMAN ERROR

COMPUTERISED IDENTIFICATION SYSTEMS ARE AVAILABLE TO ENSURE SAFE TRANSFUSION AT THE BEDSIDE. THESE SYSTEMS MUST NOW BE EVALUATED.

THE NHS IT STRATEGY SHOULD TAKE A LEAD IN ASSESSING THIS AREA OF NEW TECHNOLOGY
Computer software should be improved to offer better warnings when the component does not meet requirements.

Automation and computerisation can help reduce and perhaps even eliminate some errors, but are not infallible. They may even introduce new unforeseen sources of error, require extensive validation and revalidation after upgrades.

8% of hospital blood banks have no computer and 65% have no automation.
2006

Consultant in Kingston
Now working for UK NEQAS

Computers both in and out of the laboratory improve BT safety by removing manual steps and supporting decision-making

Concern about BT laboratory errors
BSH guidelines

Guidelines for blood bank computing
Prepared by a working party of the British Committee for Standards in Haematology Blood Transfusion Task Force
Working Party Members: P. Ashford, D. Gozzard, J. Jones, J. Revill and J. Wallis,

The specification and use of information technology systems in blood transfusion practice
British Committee for Standards in Haematology Blood Transfusion Task Force
Received 21 August 2006; accepted for publication 14 December 2006
2006

UK Transfusion Laboratory Collaborative

https://www.shotuk.org/uktlc-standards-now-published-available/
UK TLC conclusions

• A significant proportion of SHOT-reported laboratory errors were related to either the use of information technology or staff education, staffing levels, skill mix, training and competency issues.

• In the absence of any formal guidance on these matters, the UK TLC developed a series of recommendations using the results of two laboratory surveys conducted in 2007 and 2008.
Information Technology Errors

Errors caused or contributed to by IT systems

Errors caused by using IT systems incorrectly

Errors where implementation of an IT solution would have/could have prevented the error

Corrective and preventative action in response to an error included an IT solution

From 2006
SHOT Errors Attributed to Information Technology 2006-2017

(excluding Anti-D and Near Miss categories)

SHOT IT chapter editor

2006-2010 Derek Norfolk
2011-2018 Megan Rowley
2017 IT Errors

- RBRP: 24
- ADU: 16
- SRNM: 112
- HSE: 27
- ANTI-D: 10
- IBCT-WCT: 21
• Hospitals must use the UK TLC report as a basis for achieving the minimum standards recommended for staffing, skill mix, automation, training and competency in their hospital transfusion laboratories.

• Standardisation of IT systems is required across the UK. A *national minimum specification* for hospital transfusion laboratory IT systems should be developed. This would then be used when working with individual suppliers of LIMS systems.
PROMOTING THE BENEFITS OF EXISTING IT SYSTEMS

VALIDATING IT SYSTEMS TO ENSURE THEY ARE WORKING CORRECTLY

TRAINING ALL CLINICAL AND LABORATORY STAFF TO USE SYSTEMS CORRECTLY AND AS INTENDED

ENSURING ACCURACY AND SECURITY OF DATA TRANSFER ACROSS ELECTRONIC INTERFACES
2011
• Where possible all critical processes in the transfusion laboratory should be under the control of the LIMS

2012
• Hospital should participate in Sp-ICE and equivalent systems for patients with complex transfusion requirements

2016
• An industry standard for flags, alerts & warnings that prevent harm from wrong blood but ensure timely and accurate availability of blood components for clinical use
Specification, Implementation and Management of Information Technology (IT) Systems in Hospital Transfusion Laboratories

Published: 01/12/2014
UKTLC had not achieved its target

- Expected 50% reduction in reportable errors originating in the laboratory by Sept 2012
  - Laboratory errors continued to rise
- ‘Minimum standards’ for hospital transfusion laboratories on:
  - Education,
  - Training,
  - Competency
  - Use of information technology and automation
- UKAS and MHRA accepted the standards as evidence to support their assessment/inspection programmes for laboratories
INFORMATION TECHNOLOGY

It is expected that:

1. All laboratories will have complete walk-away automation which is in use 24/7, with bidirectional interfaces to the LIMS. In the absence of complete automation, documented measures must be taken in order to mitigate procedural laboratory errors

2. Electronic issue of red cells will be introduced when the laboratory infrastructure is robust and supports this procedure

3. Where remote issue of components is being considered as part of service delivery, consideration will also be given to installing complete blood tracking (vein to vein) as an integral feature of this development
2016

Now transfusion medicine consultant!

Automation & LIMS essential to BT SHOT IT errors - 10 years older and wiser

Initial expectation that IT would make transfusion safer HAS been realised – but not everyone benefits. New types of errors occur
UK NEQAS Annual Practice Questionnaire (APQ) provides a picture of UK transfusion laboratory practice.

2016: 272/382 transfusion labs (71%) responded.
UK NEQAS APQ 2016
Overview of Automation and EI

Electronic Issue
Full automation for G&S
228/254 (90%) laboratories are using automation that includes liquid handling for routine group and screening within core hours.

<table>
<thead>
<tr>
<th>Interface between automation and LIMS</th>
<th>Number (%)</th>
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<tbody>
<tr>
<td>Bi-directional</td>
<td>166 (73.5%)</td>
</tr>
<tr>
<td>Uni-directional</td>
<td>56 (24.8%)</td>
</tr>
<tr>
<td>Not interfaced</td>
<td>4 (1.8%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>226 (100%)</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test</th>
<th>Number (% of total using automation)</th>
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<tr>
<td>Antibody ID</td>
<td>148 (64.9%)</td>
</tr>
<tr>
<td>Crossmatching</td>
<td>79 (34.6%)</td>
</tr>
<tr>
<td>Phenotyping</td>
<td>95 (41.7%)</td>
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<tr>
<td>DAT</td>
<td>128 (56.1%)</td>
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APQ 2016: Electronic Patient Identification Systems

Only 46/252 (8.8%) have a ‘secure bedside electronic patient identification system’* in place.

*Defined as having barcoded wristbands with handheld barcode scanners and printers to allow secure bedside labelling of samples.
What is the problem?

- Not all hospitals have implemented IT systems to support BT practice
- Where systems are implemented they are not being used to full functionality
- Not all systems are interoperable
- Not all systems keep up with developments in BT practice
- Insufficient training means systems are used incorrectly
All available information technology (IT) systems to support transfusion practice should be considered and these systems implemented to their full functionality. Electronic blood management systems should be considered in all clinical settings where transfusion takes place. This is no longer an innovative approach to safe transfusion practice, it is the standard that all should aim for.

Action: Hospital Chief Executives, Hospital Risk Managers and Hospital Transfusion Teams
The Blood Transfusion
IT Wish-list!

• The LIMS
  – Interaction with automation and ordercomms
  – Standardisation of flags/alerts and warnings
  – Ability to EI/REI – and compliant with BSH and MHRA guidance

• Electronic patient identification and tracking systems
  – Vein-to-vein in as many hospital areas as possible
  Use in out-of hospital setting?
Subject Matter Experts

Proposed additional UK TLC minimum standard:

It is expected that each transfusion laboratory has access to a subject matter expert for blood transfusion IT to support the specification, implementation, validation of the LIMS and interoperative systems that support blood transfusion safety.

The SME should also support business as usual and ensure that system amendments and upgrades are appropriately tested and validated.
Robust guidance on IT systems relating to UK blood transfusion practice = BSH

Manufacturers/software providers to work with transfusion SMEs in a timely and collaborative way

Investment in equipment, IT systems and training - including training of SMEs
(Same) Question

In 2018, can we get the benefits of information technology and automation in blood transfusion for everyone - patients and staff?
Thank you

• To SHOT – primarily to those who report to SHOT but also the SHOT Team and members of the WEG and SG
• To the UKTLC – chair Rashmi Rook. You can expect another survey in 2019 as well as updated recommendations
• To UK NEQAS and all participants in the APQ – this information is really useful to inform guidelines and influence healthcare strategists